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# PROBABILISTIC HYDROLOGIC OUTLOOK

NATIONAL WEATHER SERVICE TWIN CITIES/CHANHASSEN MN

1145 AM CST THU MAR 7 2013

..SPRING FLOOD AND WATER RESOURCES OUTLOOK...

...PRELIMINARY INDICATIONS IN EARLY MARCH SHOW THAT THE  
CURRENT RISK FOR FLOODING DUE TO A SNOW MELT IS NEAR NORMAL  
FOR THE UPPER MINNESOTA RIVER AND PARTS OF THE UPPER  
MISSISSIPPI RIVER SYSTEM INCLUDING THE LONG PRAIRIE AND  
SAUK RIVERS....

IN TABLE 1 BELOW, THE CURRENT (CS) AND HISTORICAL (HS) OR NORMAL  
PROBABILITIES OF EXCEEDING MINOR...MODERATE...AND MAJOR FLOOD STAGES  
ARE LISTED FOR THE VALID TIME PERIOD.

CS VALUES INDICATE THE PROBABILITY OF REACHING A FLOOD CATEGORY  
BASED ON CURRENT CONDITIONS.

HS VALUES INDICATE THE PROBABILITY OF REACHING A FLOOD CATEGORY  
BASED ON HISTORICAL OR NORMAL CONDITIONS.

WHEN THE VALUE OF CS IS GREATER THAN HS...THE PROBABILITY OF  
EXCEEDING THAT LEVEL IS HIGHER THAN NORMAL. WHEN THE VALUE OF CS IS  
LESS THAN HS...THE PROBABILITY OF EXCEEDING THAT LEVEL IS LOWER  
THAN NORMAL.

...TABLE 1--PROBABILITIES FOR MINOR...MODERATE AND MAJOR FLOODING...  
VALID PERIOD: 3/11/2013 - 6/9/2013

: CURRENT AND HISTORICAL  
: CHANCES OF EXCEEDING  
: FLOOD CATEGORIES  
: AS A PERCENTAGE (%)

CATEGORICAL :  
FLOOD STAGES (FT) : MINOR MODERATE MAJOR

LOCATION	MINOR	MOD	MAJOR	CS	HS	CS	HS	CS	HS
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:REDWOOD RIVER									
REDWOOD FALLS	6.0	15.0	16.0	<5	19	<5	<5	<5	<5
:COTTONWOOD RIVER									
NEW ULM	11.0	13.0	16.0	14	31	<5	13	<5	8
:MINNESOTA RIVER									
MONTEVIDEO	14.0	16.0	17.5	49	36	9	21	<5	6
GRANITE FALLS	888.5	893.5	896.5	8	21	<5	<5	<5	<5
MANKATO	22.0	25.0	30.0	<5	9	<5	6	<5	<5
HENDERSON	732.0	736.0	739.5	<5	14	<5	6	<5	<5
JORDAN	25.0	28.0	34.0	9	24	<5	13	<5	<5
SAVAGE	702.0	710.0	712.0	39	59	<5	9	<5	6
:LONG PRAIRIE RIVER									
LONG PRAIRIE	6.0	8.0	10.0	57	34	<5	<5	<5	<5
:SAUK RIVER									
ST CLOUD	6.0	7.0	9.0	6	14	<5	6	<5	<5
:SOUTH FORK CROW RIVER									
MAYER	11.0	15.0	16.0	14	21	<5	6	<5	6
DELANO	16.5	17.5	18.5	<5	13	<5	6	<5	6
:CROW RIVER									
ROCKFORD	10.0	12.0	14.0	6	18	<5	9	<5	6
:MISSISSIPPI RIVER									
ST CLOUD	9.0	10.0	11.0	13	19	<5	11	<5	<5
ANOKA	838.0	840.0	841.0	<5	14	<5	8	<5	6
MINNEAPOLIS	16.0	16.5	17.0	<5	9	<5	8	<5	8
ST PAUL	14.0	15.0	17.0	6	23	6	18	<5	9
HASTINGS L/D#2	15.0	17.0	18.0	13	32	6	16	<5	9
RED WING L/D#3	680.5	681.5	683.0	8	21	<5	14	<5	6
RED WING	14.0	15.0	16.0	8	23	6	14	<5	13
:ST CROIX RIVER									
STILLWATER	87.0	88.0	89.0	<5	14	<5	8	<5	6
:EAU CLAIRE RIVER									
FALL CREEK	11.0	14.0	17.0	36	27	16	14	<5	<5
:CHIPPEWA RIVER									
EAU CLAIRE	773.0	776.0	778.0	<5	23	<5	9	<5	<5
DURAND	13.0	15.5	17.0	27	50	<5	14	<5	<5

#### LEGEND

CS = CONDITIONAL SIMULATION (CURRENT OUTLOOK)

HS = HISTORICAL SIMULATION

FT = FEET

IN TABLE 2 BELOW...THE 95 THROUGH 5 PERCENT COLUMNS INDICATE THE PROBABILITY OF EXCEEDING THE LISTED STAGE LEVELS (FT) FOR THE VALID TIME PERIOD.

...TABLE 2--EXCEEDANCE PROBABILITIES...

CHANCE OF EXCEEDING STAGES AT SPECIFIC LOCATIONS VALID PERIOD: 3/11/2013 - 6/9/2013							
LOCATION	95%	90%	75%	50%	25%	10%	5%
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:REDWOOD RIVER							
REDWOOD FALLS	2.9	3.0	3.4	3.9	4.4	5.6	6.3
:COTTONWOOD RIVER							
NEW ULM	6.7	7.2	7.6	8.4	9.6	12.3	13.2
:MINNESOTA RIVER							
MONTEVIDEO	11.3	11.7	12.3	14.0	15.2	16.1	16.9
GRANITE FALLS	885.6	885.7	885.9	886.4	887.3	888.4	889.4
MANKATO	8.5	9.5	10.5	12.1	14.6	17.0	17.9
HENDERSON	721.8	723.0	724.0	725.7	727.8	730.1	730.6
JORDAN	13.4	15.2	16.6	19.3	22.7	25.0	25.6
SAVAGE	693.4	695.6	698.0	700.7	704.1	706.5	708.6
:LONG PRAIRIE RIVER							
LONG PRAIRIE	5.2	5.4	5.8	6.2	6.9	7.5	7.8
:SAUK RIVER							
ST CLOUD	2.5	2.6	3.2	3.9	4.9	5.9	6.1
:SOUTH FORK CROW RIVER							
MAYER	5.4	5.8	6.9	8.4	9.8	11.4	12.8
DELANO	9.7	10.1	11.6	12.8	14.4	15.8	16.8
:CROW RIVER							
ROCKFORD	3.9	3.9	4.7	6.1	7.1	9.2	11.8
:MISSISSIPPI RIVER							
ST CLOUD	6.2	6.4	6.8	7.6	8.5	9.2	9.9
ANOKA	832.9	833.0	833.4	834.5	835.7	837.0	837.6
MINNEAPOLIS	7.4	7.5	8.0	9.7	11.3	13.1	13.9
ST PAUL	5.5	6.0	7.1	8.7	10.7	12.8	15.9
HASTINGS L/D#2	7.9	8.5	9.8	11.6	13.6	15.4	17.5
RED WING L/D#3	673.7	674.1	675.6	676.8	678.3	680.2	681.4
RED WING	7.8	8.2	9.5	10.7	12.3	13.9	15.3
:ST CROIX RIVER							
STILLWATER	79.8	80.1	81.2	82.2	83.7	85.4	86.5

:EAU CLAIRE RIVER

FALL CREEK	7.1	7.3	8.0	9.8	12.8	16.1	16.6
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:CHIPPEWA RIVER

EAU CLAIRE	763.8	764.8	765.5	767.4	770.1	772.0	773.1
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DURAND	8.5	8.8	9.9	11.2	13.2	14.8	15.0
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IN TABLE 3 BELOW...THE 95 THROUGH 5 PERCENT COLUMNS INDICATE THE PROBABILITY OF FALLING BELOW THE LISTED STAGE LEVELS (FT) FOR THE VALID TIME PERIOD.

...TABLE 3--NONEXCEEDANCE PROBABILITIES...

CHANCE OF FALLING BELOW STAGES AT SPECIFIC LOCATIONS VALID PERIOD: 3/11/2013 - 6/9/2013							
LOCATION	95%	90%	75%	50%	25%	10%	5%
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:REDWOOD RIVER							
REDWOOD FALLS	1.5	1.5	1.5	1.5	1.5	1.5	1.5
:COTTONWOOD RIVER							
NEW ULM	2.2	2.2	2.2	2.2	2.2	2.2	2.1
:MINNESOTA RIVER							
MONTEVIDEO	1.5	1.5	1.5	1.5	1.4	1.4	1.4
GRANITE FALLS	881.1	881.1	881.1	881.1	881.1	881.0	881.0
MANKATO	1.9	1.9	1.9	1.7	1.5	1.4	1.4
HENDERSON	711.7	711.7	711.7	711.7	711.6	711.6	711.6
JORDAN	3.9	3.9	3.9	3.9	3.6	3.5	3.4
SAVAGE	687.4	687.4	687.4	687.4	687.3	687.3	687.3
:LONG PRAIRIE RIVER							
LONG PRAIRIE	0.9	0.9	0.9	0.9	0.9	0.9	0.9
:SAUK RIVER							
ST CLOUD	1.0	0.9	0.9	0.9	0.9	0.9	0.9
:SOUTH FORK CROW RIVER							
MAYER	0.9	0.9	0.9	0.9	0.9	0.9	0.9
DELANO	5.0	5.0	5.0	5.0	5.0	5.0	5.0
:CROW RIVER							
ROCKFORD	1.7	1.7	1.7	1.6	1.6	1.6	1.6
:MISSISSIPPI RIVER							
ST CLOUD	3.8	3.8	3.8	3.7	3.7	3.7	3.7
ANOKA	831.0	831.0	831.0	831.0	831.0	831.0	831.0
MINNEAPOLIS	3.0	3.0	3.0	3.0	3.0	3.0	3.0
ST PAUL	3.0	3.0	3.0	3.0	3.0	3.0	3.0

HASTINGS L/D#2	4.4	4.4	4.4	4.4	4.4	4.4	4.4
RED WING L/D#3	667.0	667.0	667.0	667.0	667.0	667.0	667.0
RED WING	1.7	1.7	1.7	1.7	1.7	1.7	1.7
:ST CROIX RIVER							
STILLWATER	74.7	74.7	74.6	74.6	74.5	74.5	74.5
:EAU CLAIRE RIVER							
FALL CREEK	0.5	0.5	0.5	0.5	0.5	0.5	0.5
:CHIPPEWA RIVER							
EAU CLAIRE	758.5	758.5	758.5	758.5	758.5	758.5	758.5
DURAND	2.4	2.4	2.4	2.4	2.4	2.4	2.4

ABOVE NORMAL PRECIPITATION HAS PREVAILED IN FEBRUARY AND THE FIRST PART OF MARCH. MOST OF THIS PRECIPITATION FELL AS SNOW WHERE SNOWFALL AMOUNTS RANGED BETWEEN 15 TO 25 INCHES IN THE MINNESOTA AND CHIPPEWA RIVER VALLEYS TO 20 TO 30 INCHES IN THE MISSISSIPPI RIVER VALLEY. THESE SNOWFALL AMOUNTS EQUATE TO 1 TO 1.5 INCHES OF LIQUID ACROSS THE MINNESOTA AND CHIPPEWA RIVER VALLEYS AND 1.5 TO 2.25 INCHES OF WATER. THESE AMOUNTS ARE NEAR NORMAL TO SLIGHTLY ABOVE NORMAL.

SNOW DEPTHS VARY SIGNIFICANTLY ACROSS THE AREA. THE DEEPEST SNOWPACK IS 1.5 TO OVER 2 FEET IN THE UPPER MINNESOTA AND MISSISSIPPI RIVER BASINS. FOR THE CHIPPEWA RIVER IN WISCONSIN...1 TO 2 FEET IS PREVALENT. ACROSS ACROSS SOUTH CENTRAL MINNESOTA AND THE CANNON RIVER...AMOUNTS ARE 6 INCHES TO 1 FOOT. THE AMOUNT OF WATER IN THE SNOWPACK RANGES FROM 3 TO 5 INCHES IN THE UPPER MINNESOTA RIVER BASIN TO 2 TO 5 INCHES IN THE UPPER MISSISSIPPI RIVER SYSTEM ABOVE ANOKA. 1 TO 3 INCHES IN PREVALENT IN THE CHIPPEWA RIVER BASIN WITH 2 INCHES AND LESS IN SOUTH CENTRAL MINNESOTA AND THE CANNON RIVER BASIN.

FOR A REFERENCE MAP OF THE CURRENT SNOW DEPTHS SEE  
[WWW.CRH.NOAA.GOV/MPX/RTPDISPLAY.PHP?MAP=SNOWDEPTH](http://WWW.CRH.NOAA.GOV/MPX/RTPDISPLAY.PHP?MAP=SNOWDEPTH)

GIVEN THE AMOUNT OF WATER IN THE SNOW PACK IN THE UPPER MINNESOTA AND MISSISSIPPI RIVER BASINS...THE RISK OF FLOODING FOR THE FOLLOWING LOCATIONS IS NORMAL BASED ON THE OUTLOOKS ISSUED ON MARCH 7:

- LONG PRAIRIE ON THE LONG PRAIRIE RIVER
- ST CLOUD ON THE SAUK RIVER
- ST CLOUD ON THE MISSISSIPPI RIVER
- MONTEVIDEO ON THE MINNESOTA RIVER

- GRANITE FALLS ON THE MINNESOTA RIVER
- REDWOOD FALLS ON THE REDWOOD RIVER
- NEW ULM ON THE COTTONWOOD RIVER.

FOR MORE DETAILS ON THE RISK OF FLOODING SEE TABLE 1 AND 2 ABOVE.

FOR A QUICK REFERENCE MAP OF THE RISK OF FLOODING  
[WWW.CRH.NOAA.GOV/NCRFC/?N=SPROUTLOOKCURRENT](http://WWW.CRH.NOAA.GOV/NCRFC/?N=SPROUTLOOKCURRENT)

THE SNOW DEPTHS AND AMOUNT OF WATER IN THE SNOW PACK VARY DUE TO SEVERAL EVENTS IN DECEMBER AND JANUARY...CONTAINING MIXED PRECIPITATION...ESPECIALLY IN THE SOUTHERN PART OF THE REGION. FOR THOSE AREAS THAT HAVE DEEPER SNOW...THE RAIN WAS ABSORBED IN THE SNOWPACK...HENCE THE HIGHER AVAILABLE LIQUID WATER CONTENT. HOWEVER FOR AREAS WITH LESS SNOW DEPTH...THE WATER ABSORBED INTO THE TOP SOIL LAYERS AND THEN FROZE IN PLACE. THIS IS ESPECIALLY COMMON IN SOUTH CENTRAL AND EAST CENTRAL MINNESOTA AS WELL AS PARTS OF WEST CENTRAL WISCONSIN. THIS SITUATION IS ALSO CALLED CONCRETE FROST.

THE CHALLENGE WITH CONCRETE FROST IS IF WE HAVE A RAPID WARM UP AND OR A RAIN ON SNOW EVENT...AND THE TOP SOIL LAYER IS NOT ABLE TO THAW...THEN MOST OF THE SNOW MELT AND INITIAL RAINFALL WILL RAPIDLY RUNOFF VS PERCOLATING INTO THE SOIL OR ACT LIKE CONCRETE. THIS COULD LEAD TO FLOODING WITH ONLY A COUPLE OF INCHES OF RAINFALL. AS WE GET CLOSER TO THE SPRING THAW...WE WILL BE ABLE TO PROVIDE FURTHER DETAILS ON HOW THE CONCRETE FROST WILL AFFECT SPRING RUNOFF.

WITH THE LATER ESTABLISHMENT OF THE SNOWPACK...FROST DEPTHS RANGE SIGNIFICANTLY. ON THE HIGH END...BLOOMER WISCONSIN IS REPORTING 43 INCHES OF FROST DEPTH WHILE LONG PRAIRIE HAS 17 INCHES. THE FROST DEPTH IS SHALLOWER IN LONG PRAIRIE AS THEY HAVE MAINTAINED A SNOWPACK THROUGH THE WINTER. THE FROST IS DEEPER IN AREAS THAT HAD A COLD OUTBREAK WITH LITTLE SNOWPACK TO INSULATE THE GROUND.

A KEY FACTOR ABOUT FROST DEPTH...THIS PARAMETER INDICATES HOW DEEP THE SOIL TEMPERATURE IS BELOW FREEZING. ONE CAN NOT INFER MOISTURE CONTENT FROM THE FROST MEASUREMENT. MOISTURE CONTENT IS EVALUATED WITH SOIL CORE MEASUREMENTS. THE UNIVERSITY OF MINNESOTA AGRICULTURAL STATIONS ARE NOT ABLE TO TAKE SOIL CORES

IN THE WINTER. BUT WITH THEIR LAST MEASUREMENT IN MID NOVEMBER SOILS WERE EXCEEDINGLY DRY THROUGH THE TOP 6 FEET.

EVEN WITH DECENT MOISTURE IN THE SNOWPACK...THE ENTIRE REGION IS STILL FACING DROUGHT CONDITIONS DUE TO THE LONG TERM PRECIPITATION DEFICITS. THE LONG TERM PRECIPITATION DEFICITS FROM JULY 2012 UNTIL PRESENT IS STILL 6 TO 10 INCHES BELOW NORMAL WITH THE MOST SIGNIFICANT DEFICITS IN SOUTH CENTRAL MINNESOTA.

THE DROUGHT STATUS GENERALLY DOES NOT CHANGE SIGNIFICANTLY DURING THE FROZEN SEASON AS THERE ARE TOO MANY UNKNOWNNS OF HOW THE THAW WILL EVOLVE. THIS IS ESPECIALLY TRUE THIS YEAR WERE WE HAVE THE CONCRETE IN PLACE...AS A RAPID RUNOFF WOULD NOT HELP ALLEVIATE THE LONG TERM AGRICULTURAL DROUGHT.

THE DROUGHT MONITOR ISSUED ON MARCH 5...CONTINUED TO SHOW MUCH OF THE CENTRAL AND SOUTHERN THIRDS OF MINNESOTA AS WELL AS WEST CENTRAL WISCONSIN IN EITHER D2 SEVERE DROUGHT TO D3 EXTREME DROUGHT CONDITIONS. THE EXCEPTION IS THE LOWER PART OF THE CANNON RIVER IN EAST CENTRAL MINNESOTA WHICH IS IN D1 OR MODERATE DROUGHT CONDITIONS.

FOR MORE INFORMATION ON THE DROUGHT MONITOR REFERENCE [WWW.DROUGHT.UNL.EDU/DM/MONITOR.HTML](http://WWW.DROUGHT.UNL.EDU/DM/MONITOR.HTML)

FOR FURTHER DETAILS ABOUT THE ONGOING DROUGHT...REFERENCE THE LATEST STATEMENT ISSUED BY THE NATIONAL WEATHER SERVICE AT [HTTP://FORECAST.WEATHER.GOV/PRODUCT.PHP?SITE=MPX&ISSUEDBY=MPX&PRODUCT=DGT](http://FORECAST.WEATHER.GOV/PRODUCT.PHP?SITE=MPX&ISSUEDBY=MPX&PRODUCT=DGT)

THE MINNESOTA CLIMATE WORKING GROUP ALSO HAS A DROUGHT WEBSITE [HTTP://CLIMATE.UMN.EDU/DROUGHT](http://CLIMATE.UMN.EDU/DROUGHT)

FROM A TEMPERATURE PERSPECTIVE...AVERAGE TEMPERATURES HAVE BEEN IN THE TEENS IN FEBRUARY AND EARLY MARCH WHICH IS 1 TO 4 DEGREES BELOW NORMAL.

MOST RIVERS ARE FROZEN AND THEIR READINGS ARE ICE IMPACTED...SO FLOW DATA IS NOT AVAILABLE. HOWEVER BEFORE THE RIVERS STARTED TO FREEZE LAST DECEMBER...THEY WERE RUNNING AT NORMAL TO BELOW NORMAL LEVELS ACCORDING TO THE USGS AND MN DNR.

IN ADDITION TO FLOW INFORMATION...THE USGS AND MN DNR PROVIDES REPORTS OF RIVER ICE THICKNESS AND ICE TYPE. THIS GIVES A CONTEXT FOR ICE JAM POTENTIAL. MOST RIVERS HAVE 1 TO 2 INCHES OF SOLID ICE. WHILE THIS IS FAIRLY TYPICAL...IF WE SEE A RAPID MELT...THE ICE IS THICK ENOUGH THAT IT COULD LEAD TO ICE JAMS.

FOR ADDITIONAL INFORMATION ON STAGES OR STREAM FLOW CONDITIONS FOR USGS LOCATIONS REFERENCE

FOR MINNESOTA [WWW.WATERDATA.USGS.GOV/MN/NWIS/RT](http://WWW.WATERDATA.USGS.GOV/MN/NWIS/RT)

FOR WISCONSIN [WWW.WATERDATA.USGS.GOV/WI/NWIS/RT](http://WWW.WATERDATA.USGS.GOV/WI/NWIS/RT)

FOR A HISTORICAL CONTEXT OF THE YEAR ROUND MAINTAINED RIVER GAUGES BY THE MN USGS...REFERENCE IN LOWER CASE.

[MN.WATER.USGS.GOV/FLOOD/DURATION/INDEX.HTML](http://MN.WATER.USGS.GOV/FLOOD/DURATION/INDEX.HTML)

FOR ADDITIONAL INFORMATION ON STAGES OR STREAM FLOW CONDITIONS AT MN DNR LOCATIONS REFERENCE

[WWW.DNR.STATE.MN.US/WATERS/CSG/INDEX.HTML](http://WWW.DNR.STATE.MN.US/WATERS/CSG/INDEX.HTML)

OR

[CLIMATE.UMN.EDU/DOW/WEEKLY\\_STREAM\\_FLOW/STREAM\\_FLOW\\_WEEKLY.ASP](http://CLIMATE.UMN.EDU/DOW/WEEKLY_STREAM_FLOW/STREAM_FLOW_WEEKLY.ASP)

EVEN WITH THE CURRENT NORMAL TO BELOW NORMAL FLOOD RISK...RESIDENTS THAT ARE VULNERABLE TO FLOODING ARE URGED TO CONSIDER OR MAINTAIN THEIR FLOOD INSURANCE. HEAVY RAINS WHICH CAN LEAD TO FLASH FLOODING AND RIVER FLOODING ARE ALWAYS A CONCERN. SINCE THERE IS A 30 DAY DELAY BEFORE A FLOOD INSURANCE POLICY TAKES EFFECT...MAINTAINING FLOOD INSURANCE...JUST AS YOU WOULD HOME OWNERS INSURANCE...IS ENCOURAGED.

THE ATMOSPHERIC PATTERN WILL REMAIN FAIRLY ACTIVE INTO MID MARCH. AFTER THE STORM EXPECTED THIS WEEKEND...FOR THE PERIOD OF FROM MARCH 12TH - 20TH ANOTHER SERIES OF STORMS IS EXPECTED TO IMPACT THE AREA. HENCE NORMAL TO ABOVE NORMAL PRECIPITATION IS EXPECTED. TEMPERATURES ARE EXPECTED TO BE BELOW NORMAL.

FOR MARCH AS A WHOLE...THE OUTLOOK SHOWS EQUAL CHANCES OF ABOVE OR BELOW NORMAL PRECIPITATION AND TRENDS OF BELOW NORMAL TEMPERATURES.

THE THREE MONTH OUTLOOK FOR MARCH...APRIL AND MAY SHOWS ABOVE NORMAL TEMPERATURES. FOR PRECIPITATION...EQUAL CHANCES OF ABOVE OR BELOW NORMAL IS EXPECTED IN WESTERN MINNESOTA WHILE EASTERN MINNESOTA AND



WEST CENTRAL WISCONSIN HAS THE POTENTIAL TO SEE SLIGHTLY ABOVE NORMAL PRECIPITATION.

FROM A BIGGER PICTURE PERSPECTIVE...WHETHER OR NOT THE CURRENT SNOWPACK AND PRECIPITATION IN THE NEXT FEW MONTHS WILL HELP ALLEVIATE THE DROUGHT REMAINS TO BE SEEN.

RECOVERY OF SOIL MOISTURE IS DEPENDENT ON THE TYPE OF MELT AND WHETHER THE MOISTURE IS ABLE TO INFILTRATE INTO THE SOILS VS RUNNING DIRECTLY INTO THE RIVERS. IN ADDITION...EVEN THOUGH THE THREE MONTH DROUGHT OUTLOOK SHOWS SOME IMPROVEMENT THROUGH THE END OF MAY...THE CONFIDENCE IN THIS OUTLOOK IS LOWER SINCE WE DO NOT HAVE A LA NINA OR EL NINO PATTERN TO HELP FOCUS THE FORECAST DECISIONS. FINALLY FOR THE THREE MONTH PERIOD...THE NORMAL PRECIPITATION AMOUNT IS ROUGHLY 6 TO 7.5 INCHES. SO WHILE THE DROUGHT OUTLOOK DOES INDICATE SOME IMPROVEMENT...OVERALL THE CONCERN FOR DROUGHT CONTINUES INTO MAY.

FOR MORE INFORMATION ON THE CLIMATE OUTLOOKS REFERENCE [WWW.CPC.NCEP.NOAA.GOV](http://WWW.CPC.NCEP.NOAA.GOV)

TABLE 3 LISTED ABOVE PROVIDES A PERSPECTIVE OF THE RISK OF LOW FLOW. THE RISK OF A LOCATION FALLING BELOW STAGES AT SPECIFIC LOCATIONS PROVIDES INSIGHT OF HOW LOW THE RIVER COULD DROP THROUGH THE END OF MAY.

PROBABILISTIC LOW FLOW OR NON EXCEEDANCE INFORMATION IS ALSO AVAILABLE ON THE NWS AHPS WEBSITE AT [WEATHER.GOV/AHPS2/INDEX.PHP?WFO=MPX](http://WEATHER.GOV/AHPS2/INDEX.PHP?WFO=MPX).

LOOK UNDER THE ADDITIONAL INFORMATION SECTION...LOOK FOR THE RED HIGHLIGHTED LINK OF /HOW LOW THE RIVER COULD GO/ FOR THE LOW FLOW AND STAGE GRAPHICS.

THESE LONG-RANGE PROBABILISTIC OUTLOOKS CONTAIN FORECAST VALUES THAT ARE CALCULATED USING MULTIPLE SEASON SCENARIOS FROM 30 OR MORE YEARS OF CLIMATOLOGICAL DATA...INCLUDING CURRENT CONDITIONS OF THE RIVER...SOIL MOISTURE...SNOW COVER...AND 30 TO 90 DAY LONG-RANGE OUTLOOKS OF TEMPERATURE AND PRECIPITATION. BY PROVIDING A RANGE OF PROBABILITIES...THE LEVEL OF RISK ASSOCIATED WITH LONG-RANGE PLANNING DECISIONS CAN BE DETERMINED. THESE PROBABILISTIC FORECASTS ARE PART OF THE NATIONAL WEATHER SERVICE'S ADVANCED HYDROLOGIC PREDICTION SERVICE.

ALL OF THIS INFORMATION IS ALSO AVAILABLE IN GRAPHICAL FORMAT  
ON THE INTERNET AT

[HTTP://WWW.WEATHER.GOV/TWINCITIES](http://WWW.WEATHER.GOV/TWINCITIES) (LOWER CASE)

THE NEXT OUTLOOK WILL BE ISSUED ON MARCH 21ST.

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